

OPERATIONS AND MAINTENANCE PLAN

CAL PARK HILL TUNNEL REHABILITATION AND MULTI-USE PATHWAY PROJECT

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INTRODUCTION

This report summarizes operating and maintenance procedures for the Cal Park Hill Tunnel Bicycle and Pedestrian multiuse pathway project, Class I pathway between Andersen Drive in San Rafael and Larkspur Landing in Larkspur. The operations and maintenance procedures specified herein constitute the proposed management plan, which has been developed to identify the specific operation and maintenance activities involved with this project, along with corresponding costs.

PROJECT DESCRIPTION

The pathway will be located on the east side of the future SMART tracks between Andersen Drive in San Rafael to Larkspur Landing in Larkspur. Specific attributes of the pathway are presented below:

Length: 5,360 feet (1.02 miles)

Width: 12 feet

Surface: 3" asphalt over 8" aggregate base

Related features to be provided as part of the bike path project include:

Emergency call boxes/blue light station

Closed-circuit television (CCTV) cameras (optional)

Tunnel ventilation

Wall/Barrier between pathway and future rail alignment

New Pedestrian/Cyclist Bridge at Auburn Street

Larkspur Landing Circle connection point(s)

Retaining walls

Pathway lighting at designated locations

Tunnel lighting

Entry bollards at access points to bike path (possibly automatic)

Curb ramps at Andersen Drive/East Francisco Boulevard

Information and regulatory signing

Interpretive (i.e. historic) signing

Striping and stencils

Landscaping and amenities (low maintenance, low water at northern terminus only)

Tunnel gates

PATHWAY MANAGEMENT

BIKE PATH DESIGN

In order to maximize safety and functionality for users, and to minimize liability exposure for the project developer/operators, the Bike Path design will meet all mandatory and advisory standards as identified by Caltrans in the Highway Design Manual, California Supplement to the Manual on Uniform Traffic Control Devices (MUTCD), Americans with Disabilities Act (ADA), the California Public Utilities Commission (CPUC), and other relevant agencies and documents.

SAFETY AND LIABILITY ISSUES

Maximize user visibility especially at tunnel approaches

Provide reasonable security measures that can be upgraded as needed

Provide gates at each end of the tunnel

Provide maximum 1:2 slope at edge of the bike path shoulder, or barriers

Provide access/egress for emergency vehicles

MAINTENANCE ISSUES

Provide an adequate pavement structural section to support maintenance vehicles

Primary maintenance access from the north (Jacoby Street)

Provide vandal-proof lighting and other features that minimize maintenance needs by maintenance forces

Provide adequate access to the path to minimize trespassing

Provide adequate fencing where needed

Provide water hookups along pathway

BIKE PATH MANAGER RESPONSIBILITIES

The Marin County Department of Parks & Open Space (P&OS) will serve as the designated Bike Path Manager for this project and will be responsible for operating the pathway. The following sections address specific operating procedures and responsibilities.

Developing Bike Path Use Regulations

The purpose of pathway regulations is to promote user safety and enhance the enjoyment of all users. Pathway use regulations will be posted at entry and key access points. Establishing that the pathway facility is a regulated traffic environment like other public rights-of-way is critical for compliance and often results in a facility requiring minimal enforcement. Appropriate civil statutes and penalties will be referenced on regulatory signs other than basic traffic control signage such as speed limit signs. The pathway management agency will review proposed pathway regulations with the County Attorney for consistency with existing ordinances and enforceability.

Below are the recommended pathway regulations to be adopted and enforced by the County:

- Hours of use (recommended: 30 minutes before first ferry departure from Larkspur Landing Terminal, 30 minutes after last arrival); hours of operation should be prominently posted at bike path entrances. This may be subject to local ordinance.
- No trespassing after pathway is closed (civil statute)
- Motor vehicles, other than power assisted wheelchairs and light maintenance vehicles, are prohibited
- Standardized regulations with other County codes: no loitering; no vandalism; no dumping
- Keep to the right except when passing
- Yield to on-coming traffic when passing
- Bicycles always yield to pedestrians
- Give a audible warning when passing
- Pets must always be on short leashes
- Travel no more than two abreast
- Alcoholic beverages are not permitted on the Bike Path (civil statute)
- 20 mph speed limit
- Bicycles to yield to maintenance vehicles
- Crossings of pathway only at designated locations
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Bike Path Maintenance Plan

Proper maintenance of the pathway is of utmost importance for the productive use of the facility and the protection of the financial investment each community has made in the pathway. The following list represents suggested maintenance practices to be followed by P&OS.

Table 1: Bike Path Maintenance Activities and Frequencies

Item	Estimated Frequency
Shoulder and grass mowing	As needed (3 times per year average)
Remove fallen trees	As needed
Trash pickup/disposal	Weekly
Pavement repair	As needed
Bollard replacement	As needed
Graffiti removal	Immediately or within 24 hours of discovery
Pavement sweeping	Monthly - annually as needed
Weed control	Monthly - as needed
Sign replacement/repair	As needed
Repaint Pavement markings	1-3 years
Fence/barrier repair and replacement	Immediate
Clean drainage system	As needed
Lighting replacement/repair	As Needed
Maintain emergency telephones	As needed
Pavement sealing/repaving	As needed and within budgetary limitations

It is assumed in this plan that limited landscaping and amenities (plaza, historic markers, benches) is provided as part of this project at the northern trailhead only. P&OS maintenance responsibility will be limited to the pathway and pathway elements only (see table above), and will not include structural or major maintenance issues related to the tunnel or its systems, retaining walls, drainage, or any rail-related features.

As P&OS staff will travel the bike path daily they will note items needing repair—also the bike path users will inform the P&OS Department. P&OS maintenance staff will be trained to limit maintenance vehicle operation (engine running) in the tunnel to no more than six (6) minutes in any given hour, unless adequate mechanical ventilation is incorporated into the project.

Security and Public Safety

The Cal Park Tunnel Pathway will provide a reasonable level of self-enforcement in terms of user safety and security. Studies by the Rails-to-Trails Conservancy indicate that the frequency and character of crime and other problems on bike paths is generally similar to that of adjoining communities. These studies have also shown that the best and most effective method of enhancing safety and security is to design a functional facility that is well used by the general public. While the tunnel aspect of this project is somewhat unique, bike paths in isolated locations exist around the Bay Area (including Marin County) and California and have not experienced significant safety problems. The approach to safety and security outlined in this

plan is to provide reasonable security features and be prepared to enhance those efforts in the future if safety and security prove to be problems.

Hours of Operation: The Cal Park Tunnel Bike Path is being funded and designed to accommodate bicycle and pedestrian commuters, providing a key linkage between San Rafael and Larkspur Ferry Terminal and other destinations. Based on comments raised at the public meetings, and in order to meet the requirements of project funding, the pathway should, at a minimum, be accessible to commuters during normal commute periods. With a significant number of commuters predicted to be coming from the Larkspur Ferry Terminal, these hours should coincide within 30 minutes of the first ferry departures/arrivals each day.

The City of Larkspur has voiced its concern over these hours, and currently supports a dawn-to-dusk operating schedule. It is thus proposed that a test period of one (1) year from initial opening could be conducted to evaluate the hours of operation. Adjustments in hours, patrols, and other items will be made by P&OS based on reported incidents from City of San Rafael and Twin Cities fire and police departments. If these departments record in excess of three (3) significant incidents (vandalism, arson, assault, or other significant crime) after the first year of operation, operating hours would be reevaluated.

Signage: Installation of standardized regulatory signs at regular intervals along the Bike Path will help users internalize the rules. This could include “Bicyclists Yield to Pedestrians,” “Pass on the Left,” “Slower Traffic Stay Right” and speed limits (if applicable). Other signs that should be installed are as follows:

Access points:

Cal Park Hill Tunnel Bike Path

Hours of Operation: (based on current Larkspur Ferry schedule):

weekdays 5:20am – 10:35pm

weekends 9:00am – 8:20pm

Tunnel is closed at night

Use Alternate Route (i.e. East Sir Francis Drake-Andersen) when closed (map of alternate routes will be provided)

At tunnel entrances:

No Loitering

No Vandalism

No Trespassing when Pathway and Tunnel Closed

Appropriate civil penalties will be posted as well.

Patrols and Enforcement: Based on experience with other bike paths nationwide, this Bike Path is expected to be generally self-enforcing by the general public. The P&OS staff (or contractors) will patrol the bike path with ranger trucks on a daily basis as part of the opening and closing of the tunnel, reporting issues to local police and fire departments as they are encountered. The ultimate level of patrols will be based on reported incidents and problems.

Security Features: Below are suggested security measures:

- Provide emergency services (e.g. fire, police departments) with a map of the system, along with access points and keys/combinations to gates/bollards.
- Locate mileposts every 250 feet; identify markers on maps.
- Provide emergency telephones or call box systems in the tunnel linked to the local 911 network with instructions for use and penalties for mis-use.
- Provide adequate lighting within the tunnel and along the pathway
- Trim all vegetation at least 10 feet from the pathway where possible to maximize visibility, and try to minimize thick undergrowth.
- Enforce speed limits and other rules of the road.
- Consider installation of CCTV cameras, with internet feeds, within the tunnel. It is not expected these would be continually monitored, and law enforcement has indicated their only interest in CCTV would be for incident investigation. As visible cameras may imply to users a level of security and monitoring that does not exist, the County should carefully consider whether it wishes to incorporate this feature.
- It is recommended that the tunnel portals be developed with vandal-resistant and non-scalable gates. The P&OS Department will open and close the tunnel, ensuring no one is trapped inside, every night and morning. This crew will also report any incidents, loitering, vandalism, or maintenance problems as well.

Emergency Response and Access

Emergency access for safety, security, or maintenance purposes will be based on an established protocol between the San Rafael and Twin Cities fire and police departments. Response protocol will be developed along with an Emergency Plan/Memorandum of Understanding (MOU) that will be developed between the operator and these departments. The initial responding party will notify the other departments as soon as possible. The pathway itself is designed to allow emergency vehicles full access to the facility (except within the tunnel) and adequate vehicular access/egress. Should construction budget allow, automated and remote controlled bollards at entry points may facilitate routine patrols and emergency access.

ADMINISTRATION AND COSTS

The pathway will have specific administrative, legal, operations, and management costs to responsible agencies. Those costs are largely dependent the final design, alignment, and features on the Bike Path, unforeseen incidents on the pathway, and on local practices and financial resources.

MAINTENANCE COSTS

Daily Maintenance: The estimated annual cost of basic day-to-day maintenance activities for this project is \$30,000. This includes all of the tasks identified as ‘as needed’ or monthly in Table 1. This is based on the P&OS Department unit costs per mile for paved bike paths, and includes basic services such as sweeping, lighting replacement, weed abatement, trash removal, minor graffiti removal, and trimming.

Periodic Maintenance: The estimated annual costs for periodic maintenance, which may or may not occur every year, is dependent on the final design and construction of the pathway. This includes items such as asphalt sealing, spot repairs, major vandalism remediation, sign replacement, striping, fence repairs, minor landscaping, cleaning of the drainage system, and cleaning of CCTV domes should cameras be provided. Assuming accepted design and construction standards are used, this is estimated to cost an average of \$30,000 per year.

Inspection and Testing: The estimated cost for annual structural inspections of the tunnel lining, retaining walls and bicycle/pedestrian bridge are estimated at \$5,000 per year (tunnel lining/retaining wall inspections may or may not be a P&OS budget item). Testing and maintenance of UPS/emergency lighting battery packs should be done annually, with replacement as needed.

As part of tunnel ventilation system maintenance, calibration of gas detectors will be needed every three months, and replacement of the plug-in type CO and NO sensors is necessary every three years. Calibration is relatively simple, requiring application of a known quantity of gas to each detector and calibrating the detector as necessary. These minor functions can be performed by P&OS staff.

OPERATING COSTS

Operating costs include regular opening and closing of the tunnel gates, security costs, utilities, administration costs, and routine patrol costs. The greatest single cost is expected to be the opening and closing of the tunnel gates each day. The time and cost of performing this duty is related to the location and schedules of available staff. It is assumed that P&OS would contract out for this service, since their staff most likely will not be available to open and close the tunnel. For the sake of this estimate, the actual time (30 minutes per visit, or 60 minutes per day) is used.

Administration duties range from managing and monitoring maintenance activities, coordinating with SMART and adjacent property owners, responding to and monitoring reported problems, maintaining records, managing a budget, pursuing outside funding sources, and coordinating with cities along the pathway. It is projected that this responsibility would require approximately 20 hours per year for a senior staff person.

Should closed circuit video cameras be incorporated with an internet “feed” as part of the project, time should also be allotted to administering this system. It is anticipated this could be performed by the County’s IT department. For the purposes of assessing cost, it is assumed a DirecTV connection would be established, in which case the County would administer the CCTV website, periodically ascertain its functionality, administer passwords for offsite monitoring, maintain/rotate backup video cassettes, etc. An additional \$1,200 per year should be allocated for the DirecTV connection itself, with an additional administrative allocation of 100 hours per year (or \$8,000, using a loaded hourly of \$80/hr), if this feature was incorporated.

Estimates of man-hours per task are:

Opening/closing tunnel	730 hours
Routine patrols	
First year	130 hours
Subsequent years	40 hours
Administration	80 hours
Total	850-940 hours

Using a loaded hourly rate of \$80/hour, these operating costs are estimated at \$75,200 in Year 1 and \$68,000 in subsequent years. If a contractor conducts this operation, it is likely that competitive bids could result in lower costs. The high cost of this operation could also increase the viability of an automated system. Utilities and other operating costs are expected to cost \$4,000 per year.

LEGAL COSTS

The pathway may experience legal costs in the form of insurance premiums, litigation, and settlements. For the purposes of this pathway, it is recommended that one or more Memorandums of Understanding (MOUs) be developed between San Rafael, Larkspur, SMART and Marin County to address legal, maintenance, and emergency services costs and protocols. For this report, the P&OS Department use the same legal cost factor that it uses for any new facility such as a park or school, either on an acreage basis or user-day basis. If properly designed and managed, the pathway should not represent a significant increase in liability costs for the County, however, the P&OS Department may wish to include a cost factor for this based on the cost of an insurance policy.

REPLACEMENT COSTS

The P&OS Department requested that replacement costs be included in the cost estimates for this project. Major features that could be included in this analysis include pavement, tunnel lining, retaining walls, and the Auburn Street pedestrian/bicycle bridge. Replacement costs for the major structural elements of the project, such as the tunnel and any new retaining walls, would be the responsibility of SMART as negotiated in a Memorandum of Understanding (MOU). A line item for replacement of the pavement (aside from minor pavement maintenance) should be included in the final capital cost estimate for this project, since replacement would be a capital versus a maintenance cost item.

TOTAL COSTS

Based on these assumptions and estimates, the annual operating and maintenance cost for the Bike Path are shown below.

Year 1	Years 2 onward	
Daily Maintenance	\$30,000	\$30,000
Periodic Maintenance	\$30,000	\$30,000
Operating Costs	\$75,000	\$68,000

Utility Costs	\$ 4,000	\$ 4,000
TOTAL	\$139,000	\$132,000
Pavement Replacement Cost	\$ 12,500	\$ 12,500
Inspections	\$ 5,000	\$ 5,000

Funding for these costs are likely to come from existing general and operating funds from the P&OS Department, and possibly from new sources such as the County sales tax measure. There are few competitive grant funds that can be used for operations, maintenance, or future replacement of facilities.